SHORT REPORT

Unexplained illness among injecting drug users in Dublin: a case-control study

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An outbreak of unexplained illness among heroin users was reported in May 2000 in Dublin.[1] Between 29 April and 26 June 2000, 22 cases were identified, with eight deaths. This occurred in association with similar outbreaks in the UK, particularly Glasgow. Illness was characterised by soft tissue inflammation at the injection site, followed by hypotension and circulatory collapse. Laboratory results indicated that clostridium species were associated with the outbreaks.[2]

Analysis of cases in the UK indicate increased risk for female injectors and longer term users.[3] However, data on injecting practice were unavailable. Injecting intramuscularly has been associated with outbreaks of wound botulism and tetanus.[4 5] A prospective case-control study was initiated to identify risk factors associated with this outbreak.

PARTICIPANTS, METHODS, AND RESULTS

Interviews were conducted with case patients who met the international case definition.[1] Surrogates were used for deceased cases and were defined as people who acknowledged routinely injecting drugs in the company of, having a sexual relationship with, or being a close partner or family member of the case patient. Three surrogates were sought for each case patient. A composite surrogate interview, extracted from the interviews obtained for each case, was used in the final analysis. Interviews with cases or surrogates were obtained from 19 of 22 cases. Two cases were untraceable and in one case all surrogates refused.

At the time of the outbreak, after much publicity, injecting drug users not in treatment came forward for emergency assessment, and 100 were immediately given treatment. Sixty five controls were chosen from this group. Controls were therefore injecting drug users from the Dublin area who had injected since 1 April 2000, and who had presented for emergency treatment after publicity about the outbreak. Exclusion criteria included hospitalisation for an abscess or a new local inflammation during the previous two months. Written consent was obtained for participation in the study, and participants were paid £Ir10.

A questionnaire, developed in Glasgow and modified for use in Dublin, was administered by an interviewer. Questions were asked about; demographics, drug use, routes of injection, preparation of drugs to inject, sharing practices, sources of heroin and cocaine, illness, and blood borne virus status. Data were analysed using EpiInfo 6 and Jump In.

On univariate analysis, age group over 30 years, injecting for more than five years, injecting four or more times per day, injecting heroin of a lighter colour, injecting more than 1.0 g per hit, and injecting into muscle were associated with illness (OR>2). On multivariate analysis, only injecting heroin into muscle remained as being independently associated with illness (table 1).

COMMENT

Injecting into muscle is usually done when venous access is difficult because of scarring of veins from repeated use. This is consistent with our finding that cases were older and had been injecting for longer lengths of time than controls.

Recommendations are difficult to make as injecting drug use exposes the drug user to many perils. The injecting of heroin or other drugs into muscle may expose users, particularly older and longer term users, to dangers from infections that thrive in an anaerobic environment. Needle exchange programmes to prevent transmission of blood borne virus among injectors may limit infection from shared use of injecting equipment, but these measures may not be effective against spores contained in the drug.

This outbreak brought many drug users forward for treatment. The awareness among drug users of the need to

Table 1 Drug use and practices of Dublin cases of unexplained illness, compared with controls

	Case group (n=19)	Control group (n=65)	Odds ratio	95% CI	Adjusted odds ratio	95% CI
Female sex	6/19 (32)	17/65 (26)	1.30	0.37 to 4.54		
Age group 30+	9/19 (47)	16/65 (25)	2.76	0.94 to 8.08	1.39	0.36 to 5.26
Length of time injecting ≥5 yrs	16/19 (84)	43/65 (66)	2.72	0.80 to 12.62	2.69	0.60 to 14.95
Blood borne viral status† (HIV/HBV/HCV)	11/19 (58)	26/65 (40)	1.26	0.44 to 3.56		
Injecting heroin into vein	12/19 (63)	62/65 (95)	0.08	0.02 to 0.34*		
Injecting heroin into muscle	17/19 (89)	15/65 (23)	28.33	7.09 to 192.2*	27.04	6.53 to 187.93
Injecting ≥4 times/day	10/17 (59)	20/61 (33)	2.93	0.98 to 9.18		
Injecting cocaine	5/19 (26)	19/65 (29)	0.86	0.25 to 2.62		
Polydrug use (heroin +)	6/19 (32)	24/47 (51)	0.44	0.14 to 1.32		
Needle sharing	7/17 (41)	26/64 (41)	1.02	0.33 to 3.01		
Sharing paraphernalia	16/18 (89)	59/65 (91)	0.81	0.17 to 5.91		
Injecting heroin of lighter colour	15/16 (94)	49/64 (77)	4.59	0.82 to 86.4		
Injecting heroin of darker colour	14/18 (78)	45/64 (70)	1.47	0.46 to 5.73		
Injecting <0.5 g	2/13 (15)	23/60 (38)	0.29	0.04 to 1.22		
Injecting 0.5–1.0 g	9/13 (69)	37/60 (62)	1.40	0.40 to 5.64		
Injecting >1.0 g	3/13 (23)	5/60 (8)	3.30	0.60 to 15.81		

*p Value ≤0.05; †reported positive status for one or more.

treat abscesses and severe tissue inflammation was raised. The critical factor in relation to the response to this outbreak was the multiagency working as demonstrated by regular meeting between the disciplines involved. Thus the accident and emergency services, the Infectious Disease Services, the Drugs Services, and the Public Health Service met on a weekly basis to respond to the crisis. Expanded availability of local treatment services and the quick response of both accident and emergency and drug treatment services to any additional outbreaks will minimise death and illness in this population.

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